

## **Oil-heat treatment of rubberwood for optimum changes in chemical constituents and decay resistance**

### **ABSTRACT**

Effects of oil—heat treatment on chemical constituents and decay resistance of rubberwood (*Hevea brasiliensis*) were investigated in this work. Oil—heat treatment palm oil as heating medium was carried out by immersing rubberwood samples (300 mm longitudinally  $\times$  20 mm radially  $\times$  20 mm tangentially) in hot oil bath. Wood samples were immersed in the palm oil at temperatures and time periods ranging from 172 to 228 °C and 95 to 265 min respectively. Cellulose, hemicellulose and lignin contents and weight loss of samples by the fungus *Pycnoporus sanguineus* were evaluated. Four linear and one quadratic models were developed using response surface methodology. High adjusted  $r^2$  values were obtained and the adequacy of the models was confirmed. Cellulose and hemicellulose reduced in treated samples. Such reductions became greater with increasing temperature and exposure time. However, lignin content of samples increased with increasing temperature of treatment and extended time. Decay resistance of treated samples against *P. sanguineus* improved with increased treatment temperature and time. The enhancement in decay resistance was highly related to chemical constituents in the treated sample.

**Keyword:** Central composite design; *Hevea brasiliensis*; Palm oil; *Pycnoporus sanguineus*; Response surface methodology